

We claim:

1. A method of reducing human perceptibility of visible artifacts attributable to embedding a digital watermark in a media signal, said method comprising:

5 determining a contrast measurement for at least some local areas of the media signal;

adjusting a contrast measurement for a local area if the contrast measurement is above a predetermined level; and

10 embedding the digital watermark in the at least some local areas in a manner determined at least in part by their respective contrast measurement.

2. The method claim 1, wherein the predetermined level is determined with respect to an average contrast measurement for at least a portion of the media signal.

15 3. The method of claim 1, wherein said determining step comprises filtering.

4. The method of claim 3, wherein the filtering comprises non-linear filtering.

5. The method of claim 1, wherein the media signal comprises an image.

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6. The method of claim 5, wherein the contrast measurement helps to identify areas within the image having relatively noisy contrast.

7. The method of claim 6, wherein watermark embedding strength is increased for relatively noisy contrast areas.

8. The method of claim 1, wherein the predetermined level comprises an
5 expected peak contrast level for the media signal.

9. The method of claim 1, wherein the contrast measurement comprises at least a measure of luminance contrast.

10 10. The method of claim 1, wherein the adjusting comprises at least one of reducing the measurement and penalizing the measurement.

11. The method of claim 1, wherein said embedding the digital watermark in the local areas in a manner determined at least in part by their respective contrast
15 measurement comprises varying watermark embedding strength as determined by contrast measurement.

12. A method of reducing the human perceptibility of visible artifacts attributable to embedding a digital watermark in a media signal, said method comprising:

determining a contrast measurement for local areas of the media signal;

adjusting a contrast measurement for a local area if the contrast measurement is

5 above a predetermined level;

analyzing the media signal to compute a measure of directional edges in the signal; and

embedding the digital watermark in the local areas as determined at least in part by their respective contrast measurement and measure of directional edges.

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13. The method of claim 12, further comprising computing control data based at least in part on the measure of directional edges.

14. The method of claim 13, wherein the control data is used to selectively
15 suppress a digital watermark signal around the directional edges in a manner that controls human perceptibility of the digital watermark signal embedded within the media signal.

15. The method of claim 12, wherein the adjusting comprises at least one of reducing and penalizing.

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16. Apparatus comprising:

electronic processing circuitry;

memory in communication with the electronic processing circuitry, said memory including executable instructions stored thereon, said instructions being executed by said

5 electronic processing circuitry, said instructions comprising instructions to:

analyze a media signal to: i) determine a measure of directional edges at samples in the media signal; ii) measure local contrast at samples in the media signal; iii) map local contrast to a measure of sensitivity;

10 use data representing the measure of directional edges and the measure of sensitivity to compute control data; and

adjust steganographic embedding of the media signal according to the control data in a manner that minimizes perceptibility of the embedding.

17. Apparatus according to claim 16, wherein at least the data representing the
15 measure of the directional edges is used to selectively suppress signal strength of the steganographic embedding around directional edges.

18. Apparatus according to claim 16, wherein the steganographic embedding comprises digital watermarking.

19. Apparatus according to claim 16, where said executable instructions to analyze a media signal further comprise instructions to: adjust a measure of local contrast if the measure is above a predetermined level.

5 20. Apparatus according to claim 19, wherein the adjusting comprises at least one of reducing or penalizing.